

REPORT

EPS Risk Assessment

Client: Caledonian Maritime Assets Ltd

Reference: Proposed works at the Caledonian Maritime Assets Limited port developments (CMAL SVRP)

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Executive Summary

This EPS Risk Assessment supports the marine licence application for the proposed CMAL SVRP port development works. The assessment considers potential effects on EPS from underwater noise and vibration associated with the proposed works.

The works are expected to generate mainly non-impulsive underwater noise. Auditory injury to EPS is considered unlikely and an EPS licence for injury is not considered necessary.

Short-term, localised disturbance to EPS may occur, particularly during dredging; however, any effects are expected to be temporary and reversible.

Mitigation will include a pre-works visual scan before noisy or vibration-generating activities commence. Overall, the proposed works are not predicted to result in injury or population-level effects to EPS, basking shark or designated sites. **The need for an EPS licence should therefore be considered in relation to disturbance only.**

1 Introduction and Project Information

This European Protected Species (EPS) Stage 1 Risk Assessment (RA) has been undertaken to support the Marine Licence application submitted to the Marine Directorate - Licensing Operations Team (MD-LOT) regarding proposed works at the Caledonian Maritime Assets Limited port developments (CMAL SVRP) at Portavadie. The works are wholly within 12 nautical miles (nm).

NatureScot advised that a RA is required to determine whether there is potential for the proposed developments to cause deliberate harm or inadvertently cause disturbance to cetaceans or other protected species due to underwater noise from the proposed activities and if mitigation would be required for proposed activities. The need for a Marine EPS Licence will be determined by the MD- LOT, with advice from NatureScot, based on findings from the EPS RA.

MD-LOT's consideration of whether an EPS Licence will be required will comprise three tests:

1. To ascertain whether the licence is to be granted for one of the purposes specified in the Regulation 44;
2. To ascertain whether there are no satisfactory alternatives to the activity proposed (that would avoid the risk of offence); and
3. That the licencing of the activity will not be detrimental to the maintenance of the population of the species concerned at a *Favourable Conservation Status* (FCS)¹.

1.1 EPS Protection

All species of cetacean (whale, dolphin, and porpoise) occurring in UK waters are listed in Annex IV of the Habitats Directive as EPS, meaning that they are species of European interest in need of strict protection, as directed by Article 12 of the Directive.

This protection is afforded in Scottish territorial waters (within 12 nm) under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Regulation 39(1) of these Regulations make it an offence to:

- a. Deliberately or recklessly capture, injure or kill a wild animal of an EPS;
- b. Deliberately or recklessly:
 - i. Harass a wild animal or group of wild animals of an EPS;
 - ii. Disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
 - iii. Disturb such an animal while it is rearing or otherwise caring for its young;

¹ The Habitats Directive defined the conservation status of a species to be taken as 'favourable' when population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, when the natural range of the species is not being reduced for the foreseeable future and there is a sufficiently large habitat to maintain its populations on a long-term basis.

- iv. Obstruct access to a breeding site or resting place of such an animal, or otherwise to deny the animal use of the breeding site or resting place;
- v. Disturb such an animal in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs;
- vi. Disturb such an animal in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed, or reproduce, or rear or otherwise care for its young; or
- vii. Disturb such an animal while it is migrating or hibernating.

Further protection is afforded through an additional disturbance offence given under Regulation 39(2) which states that “*it is an offence to deliberately or recklessly disturb any dolphin, porpoise or whale (cetacean)*”.

1.1.1 What Constitutes Disturbance within 12 Nautical Miles?

Whether or not a specific activity could cause ‘disturbance’ depends on the nature of the particular activity and the impact on the particular species. Whilst ‘disturbance’ is not defined in the Habitats Regulations, Marine Scotland (2014) advise that the following matters should be taken into account when considering what constitutes disturbance:

- ‘Disturbance’ in Article 12(1) (b) should be interpreted in light of the purpose of the Habitats Directive to which this Article contributes. In particular, Article 2(2) of the Directive provides that measures taken pursuant to the Habitats Directive must be designed to maintain or restore protected species at FCS;
- Article 12(1)(b) affords protection specifically to species and not to habitats;
- The prohibition relates to the protection of ‘species’ not ‘specimens of species’;
- Although the word ‘significant’ is omitted from Article 12(1)(b) in relation to the nature of the disturbance, that cannot preclude an assessment of the nature and extent of the negative impact and ultimately a judgement as to whether there is sufficient evidence to constitute prohibited ‘disturbance’ of the species;
- It is implicit that activity during this period of breeding, rearing, hibernation and migration is more likely to have a sufficient negative impact on the species and constitute prohibited ‘disturbance’ than activity at other times of the year;
- Article 12(1)(b) is transposed into domestic legislation by Regulation 39(1) and (2) of the Habitats Regulations 1994. Therefore, when considering what constitutes ‘disturbance’, thought should be given to Regulation 39(1)(b) which provides a number of specific circumstances where an EPS could be disturbed, and which can potentially have an impact on the status of the species; and
- Disturbance that could be considered an offence may occur in other circumstances and therefore be covered under Regulation 39(2) of the Habitats Regulations which state that

it is an offence to ‘deliberately or recklessly disturb any dolphin, porpoise or whale (cetacean)’.

Marine Scotland (2020) advise that while the likelihood of acute injury can be relatively easy to determine, auditory injury accumulated over a period of time and disturbance are not so straightforward so assessments will need to be based on a number of factors including:

- The spatial and temporal distribution of the animal in relation to the activity;
- The duration of the activity;
- Any behaviour learned from prior experience with the activity;
- Similarity of the activity to biologically important signals (particularly important in relation to activities creating sound); and
- The motivation for the animal to remain within the areas (e.g., food availability).

As noise can cause disturbance to cetaceans, any application for an EPS licence will require detailed information on the source level of the sound and its frequency. Where there is the possibility for disturbance to any individual EPS occur, an EPS RA must be carried out and the need for a Marine EPS Licence determined.

1.2 Basking Shark Protection

Basking sharks (*Cetorhinus maximus*) are listed on Schedule 5 of the Wildlife and Countryside Act (WCA) 1981, CITES Appendix II, and are listed on the Bonn Convention on Migratory Species, and the Common Fisheries Policy. Basking shark are protected from disturbance up to 12 nm offshore from the Countryside and Rights of Way Act (2000) in England and Wales, and from the Nature Conservation (Scotland) Act (2004). Basking sharks are protected under Schedule 5 of the WCA which prohibits the killing, injuring or taking by any method of those wild animals listed on Schedule 5 of the Act. The Nature Conservation (Scotland) Act 2004, Part 3 and Schedule 6 make amendments to the WCA, strengthening the legal protection for threatened species to include ‘reckless’ acts, and specifically makes it an offence to intentionally or recklessly disturb or harass basking sharks. A derogation licence under the WCA will, therefore, be required for any activity which may result in disturbance or injury to basking sharks.

1.3 Proposed Works

The proposed CMAL SVRP works are due to commence 21st September for approximately 12 weeks. The works may involve the use of a range of construction equipment, including rotary percussion drills, excavator mounted hydraulic breaker, battery-powered drills/drivers, concrete saws, water jets, and dredging (which would include the use of tugs and barges). These activities have the potential to generate underwater noise and vibration where works are undertaken in proximity to, or directly within, the marine environment. Depending on site conditions, works may be conducted either from land during low tide or from vessels and other platforms on the water, and therefore there is the potential for underwater noise impacts on EPS.

Table 1-1 Types of equipment that could be used including source level and frequencies

Equipment	Description	Typical Frequency Range (Hz)	Typical Source Level (dB re 1 µPa @ 1 m)	Reference
Hand-held breaker (jackhammer)	Pneumatic or hydraulic breaker used for concrete removal above the tidal zone	50-5,000 Hz	140-170 dB SPL	Nedwell <i>et al.</i> (2003); CSA Ocean Sciences (2014)
Percussion drill	Rotary/percussive drill used for rock or concrete excavation	100-10,000 Hz	140-165 dB SPL	Nedwell <i>et al.</i> (2003)
Angle grinder	Abrasive cutting/grinding of metal or concrete	500-10,000 Hz	120-150 dB SPL	Richardson <i>et al.</i> (1995)
Cut-off saw	Petrol or electric disc saw used for cutting concrete or steel	500-10,000 Hz	130-160 dB SPL	Richardson <i>et al.</i> (1995)
Water-jetting equipment	High-pressure water jet for cleaning or excavation	100-20,000 Hz	130-160 dB SPL	Urlick (1983)
Excavator-mounted hydraulic breaker	Hydraulic hammer attached to excavator for breaking rock or concrete	20-5,000 Hz	170-190 dB SPL	Rodkin & Pommerenck (2014)
Flat-top barge	Non-propelled work platform used during dredging operations	20-1,000 Hz	150-170 dB RMS	McKenna <i>et al.</i> (2012); Todd <i>et al.</i> (2015)
Hopper barge	Barge used for transport and disposal of dredged material	20-1,000 Hz	160-180 dB RMS	Robinson <i>et al.</i> (2011); Todd <i>et al.</i> (2015)
Tug vessel	Support vessel used to manoeuvre barges and plant	20-1,000 Hz	170-185 dB RMS	Erbe <i>et al.</i> (2019); McKenna <i>et al.</i> (2012)
Mechanical dredging equipment	Excavation and removal of seabed material	Predominantly 50-2,000 Hz	160-180 dB RMS	Todd <i>et al.</i> (2015); Robinson <i>et al.</i> (2011)

2 Protected Species and Sites

2.1 Cetacean Species

2.1.1 Presence within the Proposed Development Area

As noted above, all cetaceans are protected under Annex IV of the EC Habitats Directive, which lists species of community interest in need of strict protection.

A large-scale survey of the presence and abundance of cetacean species around the north-east Atlantic was undertaken in the summer of 2022 and provides cetacean species density estimates (Small Cetaceans in the European Atlantic and North Sea (SCANS-IV) survey; Gilles *et al.*, 2023). The proposed CMAL SVRP works are located off the south-west coast of Scotland, in Argyll and Bute. This is within Block CS-F of the SCANS-IV survey (Gilles *et al.*, 2023; **Plate 2-1**).

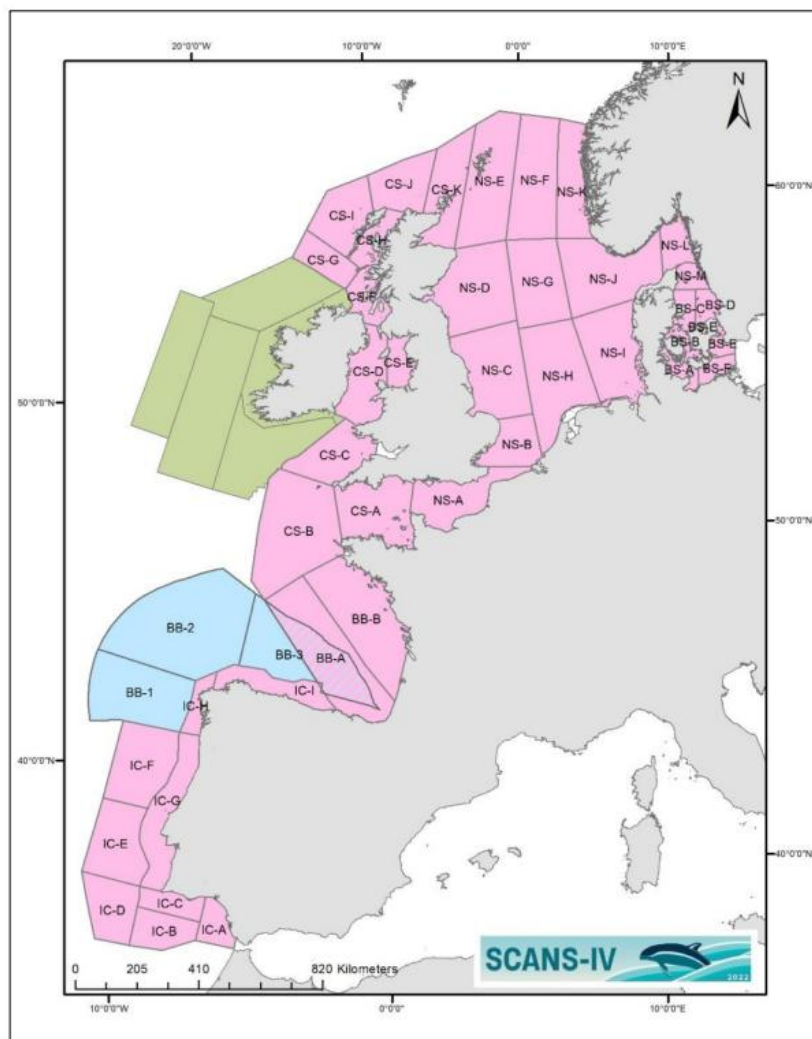


Plate 2-1 SCANS-IV survey blocks (Gilles *et al.*, 2023)

SCANS-IV indicates harbour porpoise *Phocoena phocoena* to be the most common cetacean species present in the relevant survey block CS-F (Error! Reference source not found.). SCANS-IV and Waggitt *et al.* (2019) show that there are seven cetacean species known to be present in the area, including: harbour porpoise, bottlenose dolphin *Tursiops truncatus*, short beaked common dolphin *Delphinus delphis*, Risso's dolphin *Grampus griseus*, orca *Orcinus orca* and minke whale *Balaenoptera acutorostrata*. There is no presence of white-beaked dolphin *Lagenorhynchus albirostris* within block CS-F, however there is in the neighbouring block CS-G.

The distribution maps of cetacean species within the north-east Atlantic also indicate that harbour porpoise is present off western Scotland in the highest densities, followed by, short-beaked common dolphin, and bottlenose dolphin, while Risso's dolphin, orca and minke whale are present in lower densities (**Plate 2-2**; Waggitt *et al.*, 2019). Waggitt *et al.* (2019) also shows presence of white-beaked dolphin.

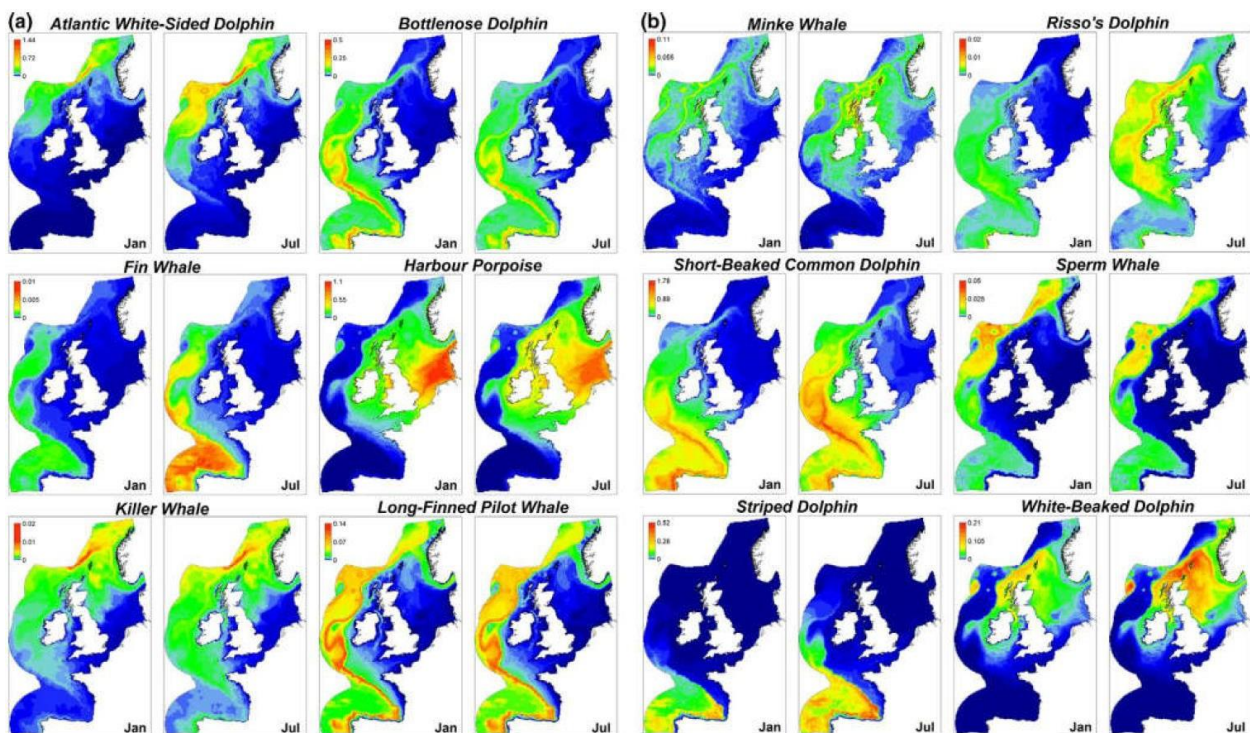


Plate 2-2 Modelled densities for marine mammal species (per km²) in the north-east Atlantic (for January (a) and July (b)). Note that the densities for bottlenose dolphin represent the offshore ecotype, and do not represent the inshore resident populations (Waggitt *et al.*, 2019).

Based on the above, the cetacean species that could be present in and around the proposed port development area include:

- Harbour porpoise;
- Bottlenose dolphin;
- Short beaked common dolphin;

- Risso's dolphin;
- White-beaked dolphin;
- Orca; and
- Minke whale.

2.1.2 Wider Populations

Management Units (MUs) provide an indication of the spatial scales at which any impact should be assessed for the key cetacean species (Inter-Agency Marine Mammal Working Group (IAMMWG), 2023). MUs, and the latest population estimate for each marine mammal species, have been determined based on the most relevant information, and scale at which potential impacts could occur.

For harbour porpoise, the relevant MU is the West Scotland (WS) MU, and for short beaked common dolphin, Risso's dolphin, white-beaked dolphin and minke whale, there is just one MU that covers the north-east Atlantic; the Celtic and Greater North Seas (CGNS) MU (**Plate 2-3**; IAMMWG, 2023).

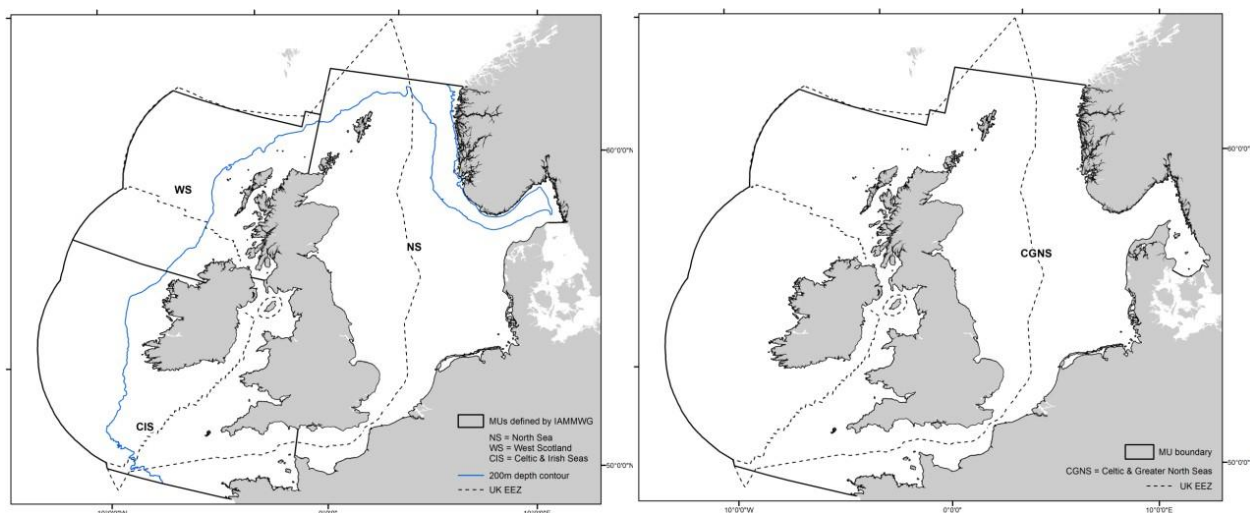


Plate 2-3 The MUs for harbour porpoise (left), and Atlantic white-sided dolphin, Risso's dolphin, short beaked common dolphin, white-beaked dolphin and minke whale (right); IAMMWG, 2023

For bottlenose dolphin, there are seven MUs within the north-east Atlantic (**Plate 2-4**; IAMMWG, 2023). There are two eco-types of bottlenose dolphin present in Europe; the coastal type and the pelagic type, and that these types are genetically and ecologically different from each other (Louis *et al.*, 2014). For the proposed port development area it is likely for any bottlenose dolphin within the area would be the inshore ecotype and would therefore be part of the Coastal West Scotland and Hebrides (CWSH) MU.

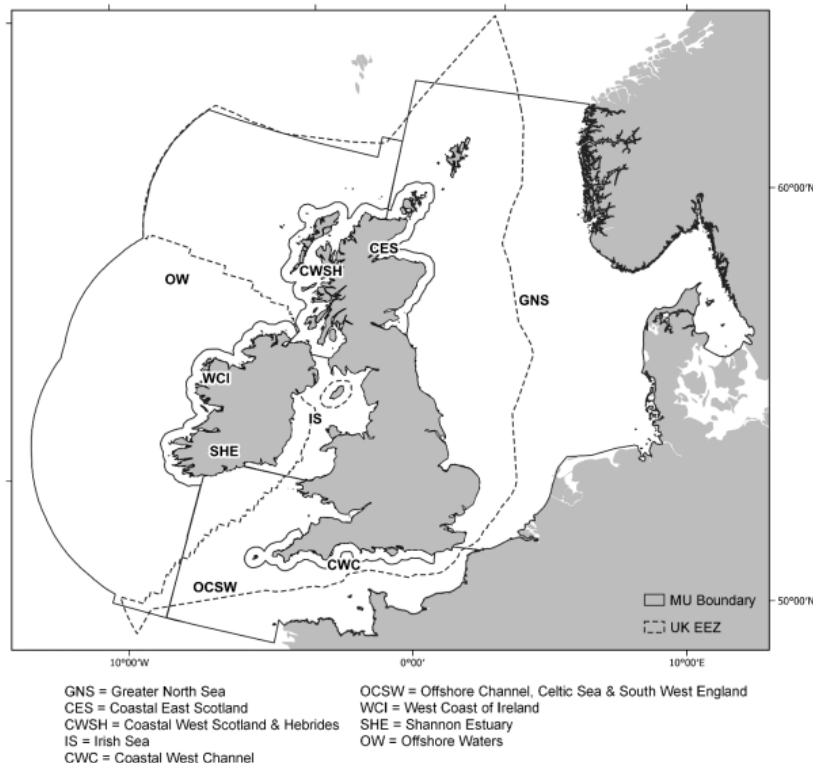


Plate 2-4 The MUs for bottlenose dolphin; IAMMWG, 2023

There is no estimated MU for killer whales from IAMMWG, however the North Atlantic Marine Mammal Commission (NAMMCO), estimate the MU for killer whales in the Northeast Atlantic to be 15,014 (NAMMCO, 2023). In addition, a population estimate of eight individuals has been assessed to take account of those regularly sighted off Scotland as part of the West Coast Community (WCC) (Beck *et al.*, 2014; Hebridean Whale and Dolphin Trust (HWDT), 2023). As the port location is very much inshore, all assessments for Orca would be undertaken against the WCC population estimate of eight.

2.1.3 Summary of Cetacean Species

Assessments have not been undertaken for cetacean species that are considered to be rare or infrequent in the area, as the potential for these cetacean species to be impacted is considered unlikely.

However, if individuals of other cetacean species (EPS species) were present in the area, then the mitigation measures outlined below will be suitable for these species, as the assessments have been carried out on all the representative functional hearing groups for porpoise, dolphin and whale species. **Table 2-1** summarises the cetacean species, density estimates, and reference populations used in the following assessments.

All cetacean densities have been taken from the most recent SCANS survey in summer 2022 (Gilles *et al.*, 2023) for Block CS-F unless stated otherwise. No killer whales were recorded in

block CS-F, therefore average Waggitt *et al.*, (2019) densities across the area of the SCANS-IV block CS-F has been calculated (**Table 2-1**).

All assessments are undertaken against the UK portion of the IAMMWG MUs.

Table 2-1 Cetacean species density estimates and reference populations based on the UK portion of the wider MU

Species	Density Estimate (per km ²)	Reference Population
Harbour porpoise	0.2010 (CV = 0.425) (Gilles <i>et al.</i> , 2023)	24,305; WS MU (IAMMWG, 2023)
Bottlenose dolphin	0.0532 (CV = 0.742) (Gilles <i>et al.</i> , 2023)	45; CWSH MU (IAMMWG, 2023)
Common dolphin	0.0544 (CV = 1.028) (Gilles <i>et al.</i> , 2023)	57,417; GNS MU (IAMMWG, 2023)
Risso's dolphin	0.0027 (CV = 1.006) (Gilles <i>et al.</i> , 2023)	8,687; CGNS MU (IAMMWG, 2023)
White-beaked dolphin	0.2543 (CV = 0.815) (Gilles <i>et al.</i> , 2023) [Block CS-G]	34,025; CGNS MU (IAMMWG, 2023)
Orca	0.0005 (Waggitt <i>et al.</i> , (2019) densities over SCANS-IV CS-F block (annual density))	8; WCC (HWDT (2023))
Minke whale	0.0137 (CV = 1.091) (Gilles <i>et al.</i> , 2023)	10,288; CGNS MU (IAMMWG, 2023)

2.2 Other Protected Species and Sites

2.2.1 Basking shark

Within UK waters, the basking shark is a seasonal visitor, arriving in significant numbers in May and remaining until October, with areas attracting higher abundancies, such as the Hebrides (particularly off the islands of Skye and Mull), the Isle of Man, Malin Head, and south-west England. In the early spring and summer months, warmer waters move from the Atlantic into the coastal waters of west Scotland, England, and Wales, which encourages greater marine productivity. It is thought that this increase is the reason for the higher abundancies of basking sharks during these months (The Shark Trust, 2018).

The basking shark is an elasmobranch (sharks and rays) which is a group with generally low sensitivity to noise vibrations due to the fact they do not have a swim bladder (Popper *et al.*, 2014). The hearing range of basking sharks is not known; however, five other elasmobranchs have been found to have a hearing range between 20 Hz to 1 kHz with greatest sensitivities at lower frequencies (Mickle *et al.*, 2020) (note this may or may not be transferable to basking sharks (Macleod *et al.*, 2011)). As 20 Hz to 1 kHz only encompass a small proportion of the noise emitted during the proposed CMAL SVRP works, and the activities will be intermittent, noise disturbance

is not expected to impact basking sharks. On this basis, the potential for noise emissions to impact upon basking sharks is screened out of further assessment.

The Shark Trust has recorded 99 sightings off the west coast of Scotland between 2003 – 2022, there is an estimated abundance of 112 individuals (Shark Trust, 2020).

2.2.2 Pinnipeds

Harbour seal *Phoca vitulina* and grey seal *Halichoerus grypus* are common throughout UK waters. Although both species are Annex II species, they are not listed on Annex IV of the Habitats Directive, and as such are not classified as EPS. Seals are protected in the UK under the Conservation of Seals Act 1970 and in Scotland the Marine (Scotland) Act 2010. Both species are listed under Annex II of the EU Habitats Directive and are considered Scottish Priority Marine Features (PMFs). The Protection of Seals (Designated of Haul-Out Sites) (Scotland) Order 2014 introduces additional protection for seals at 194 designated haul-out sites, where harbour seal and grey seal come ashore to rest, moult or breed.

2.3 Designated Sites

2.3.1 Special Areas of Conservation

SACs are designated under Regulation 33(2) of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland). Part II of the Habitats Regulations sets out the provisions for the selection of Special Areas of Conservation (SACs) for Annex I habitats and Annex II species. Key to the designation of SACs is Paragraph 7 (2), the relevant part of which states: “...For aquatic species which range over wide areas, such sites will be proposed only where there is a clearly identifiable area representing the physical and biological factors essential to their life and reproduction”.

The Inner Hebrides and the Minches SAC

The Inner Hebrides and the Minches has been designated because of its importance to harbour porpoise year-round as it contains the highest density of harbour porpoise in Scotland (NatureScot, 2020). It is the second largest Marine Protected Area (MPA) for harbour porpoise in Europe, and the only one for harbour porpoise in Scotland. It comprises an area of 13,807.99 km² and as such it provides protection to approximately 32% of the harbour porpoise population found on the west coast of Scotland.

The proposed works at CMAL SVRP at Portavadie, is approximately 20 km over land and 133 km around the coastline from the Inner Hebrides and the Minches SAC. The Inner Hebrides and the Minches SAC is beyond that of potential for direct, alone or in-combination effects, and mitigation would be in place to reduce any risk of potential auditory injury (AUD INJ and permanent threshold

shift (PTS)). Therefore, the Inner Hebrides and the Minches SAC has been screened out of further consideration.

South East Islay Skerries SAC

The skerries, islands and rugged coastline of Islay in the Inner Hebrides support a nationally important harbour seal population, with an estimated abundance of 288 individuals (SCOS, 2025). The south-east coast is extensively used for pupping, moulting and haul-out activities, and the population represents approximately 1.5-2% of the total UK harbour seal population.

The South-East Islay Skerries SAC is located approximately 125 km along the coastline from the proposed CMAL SVRP works and is therefore considered beyond the range at which direct, either alone or in-combination, effects are likely to occur. In addition, mitigation measures will be implemented to minimise the risk of injury, including permanent auditory injury (AUD INJ/PTS). Consequently, the South-East Islay Skerries SAC has been screened out from further consideration.

2.3.2 Marine Protected Areas

Sea of the Hebrides ncMPA

The Sea of the Hebrides Nature Conservation Marine Protected Area (ncMPA), where minke whale and basking shark are qualifying features, is situated on the outer side of the Isle of Mull, around Isle of Harris and the northwest coast of Scotland. The ncMPA was first designated in 2020 and comprises an area of 10,039 km².

The Sea of the Hebrides ncMPA is approximately 200 km from the proposed works at CMAL SVRP is therefore considered beyond the range at which direct and has been screened out from further consideration.

2.3.3 Protected Seal Haul-Out Sites

Protected seal haul-out sites are coastal locations that seals use to breed, moult and rest. Almost 200 seal haul-out sites have been designated through The Protection of Seals Harbour (Designation of Haul-Out Sites) (Scotland) Order 2014 which was amended with additional sites in 2017. These haul-out sites are protected under Section 117 of the Marine (Scotland) Act 2010. The Act is designed to assist in protecting the seals when they are at their most vulnerable, and as such provide additional protection from intentional or reckless harassment.

The closest protected seal haul-out site is Rubha nan Sgarbh at 41km and Yellow Rock at 50km, Lady Isle at 54km and Sound of Pladda Skerries at approximately 57km from the proposed works at CMAL SVRP. Taking into account the distances from the proposed works and nearest protected



seal haul-out sites, there will be no direct effects from the proposed surveys. Therefore, protected seal haul-outs sites have been screened out from further consideration.

3 European Protected Species Assessment

3.1 Assessment of Significance

Assessments of the potential for significant population level effect have been based on the JNCC *et al.* (2010) draft guidance for effects on EPS, and the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS).

The JNCC *et al.* (2010) draft guidance provides some indication on how many animals may be removed from a population without causing detrimental effects to the population at FCS. The JNCC *et al.* (2010) draft guidance also provides limited consideration of temporary effects, with guidance reflecting consideration of permanent displacement.

JNCC *et al.* (2010) draft guidance considered 4% as the maximum potential growth rate in harbour porpoise, and the 'default' rate for cetaceans. Therefore, beyond natural mortality, up to 4% of the population could theoretically be permanently removed before population growth could be halted. In assigning 5% to a temporary effect, consideration is given to uncertainty of the individual consequences of temporary disturbance.

Permanent effects with a greater than 1% of the reference population being affected within a single year are considered to result in a significant effect. This is based on ASCOBANS and Defra advice (Defra, 2003; ASCOBANS, 2015) relating to impacts from fisheries by-catch (i.e. a permanent effect) on harbour porpoise. A threshold of 1.7% of the relevant harbour porpoise population above which a population decline is inevitable has been agreed with Parties to ASCOBANS, with an intermediate precautionary objective of reducing the impact to less than 1% of the population (Defra, 2003; ASCOBANS, 2015).

As a precautionary approach, and as there is no current guidance on what determines a significant temporary or permanent effect, the above information on the potential for population level effects has been used to inform the approach to defining the potential for significant population level effects for EPS. The approach is therefore as follows:

- For temporary effects, there would be potential for significant population level effect if there is an effect to 5% or more of the population; and
- For permanent effects, there would be potential for significant population level effect if there is an effect to 1% or more of the population.

3.2 Potential Impacts

Underwater noise has the potential to impact cetaceans if the frequency is within their hearing range (**Table 3-1**) and / or the sound levels are greater than thresholds for the species (**Table 3-2**) (National Marine Fisheries Service (NMFS), 2024).

Table 3-1 Cetacean hearing ranges (from NMFS, 2024)

Species Hearing Group	Generalised Hearing Range
Very high-frequency cetaceans (VHF): Harbour porpoise	200 Hz to 165 kHz
High-frequency cetaceans (HF): Bottlenose dolphin, white-beaked dolphin, and common dolphin (or any other dolphin/blackfish species)	150 Hz to 160 kHz
Low-frequency cetaceans (LF): Minke whale and fin whale (or any other whale species)	7 Hz to 36 kHz

The potential for auditory injury is not just related to the level of the underwater sound and its frequency relative to the hearing bandwidth of the animal, but is also influenced by the duration of exposure. Southall *et al.* (2019) and NMFS (2024) give individual criteria based on whether the noise source is considered impulsive or non-impulsive. Southall *et al.* (2019) and NMFS (2024) categorises impulsive noises as having high peak sound pressure, short duration, fast rise-time and broad frequency content at source, and non-impulsive sources as steady-state noise. Seismic airguns are considered impulsive noise sources. Sonars, vessels and other low-level continuous noises are considered non-impulsive. A non-impulsive noise does not necessarily have to have a long duration.

NMFS (2024) presents unweighted peak criteria for Sound Pressure Level (L_p) (L_{p-pk}) and cumulative (i.e. more than a single sound impulse) weighted Sound Exposure Level ($L_{E,p}$) criteria ($L_{E,p,t}$) for AUD INJ (PTS), where unrecoverable hearing damage may occur, and temporary threshold shift (TTS), where a temporary reduction in hearing sensitivity may occur in individual receptors (**Table 3-2**).

Table 3-2 Cetacean threshold and criteria for underwater noise (from NMFS, 2024)

Species Hearing Group	Unweighted L_p -pk (dB re 1 μ Pa)		Weighted $L_{E,p,t}$ (dB re 1 μ Pa ² s)			
	Impulsive		Impulsive		Non-impulsive	
	INJ	TTS	INJ	TTS	INJ	TTS
Harbour porpoise (VHF cetacean)	202	196	159	144	181	161
Dolphin species (HF cetacean)	230	224	193	178	201	181
Minke and fin whale (LF cetacean)	222	216	183	168	197	177

Table 1-1 summarises the different types of survey equipment, taking into account frequency range and sound levels.

3.3 Assessment of Potential Effects of the Proposed Equipment on EPS

The proposed slipway works are expected to generate relatively low levels of non-impulsive underwater noise, which are unlikely to exceed recognised auditory injury thresholds for marine mammal species (NMFS, 2018). Most activities, including the use of hand-held breakers, percussion drills, grinders, cut-off saws and water-jetting equipment, are anticipated to result in only localised and temporary behavioural disturbance to cetaceans and potentially other EPS present within the immediate vicinity of the works, consistent with the relatively small-scale and intermittent nature of these construction activities (JNCC, 2024).

The excavator-mounted hydraulic breaker has the greatest potential to generate underwater noise and substrate-borne vibration; however, given the limited spatial extent of the works, shallow-water environment, and anticipated short duration of use, impacts are expected to be restricted to temporary behavioural disturbance and localised avoidance of the work area. Similar assessments of nearshore construction activities have concluded that significant effects are generally limited to short-term behavioural responses where noise exposure levels remain below injury thresholds (NMFS, 2024). Auditory injury, significant disturbance, or population-level effects are therefore not anticipated.

Dredging activities undertaken using a flat-top barge, hopper barge and tug would generate continuous, non-impulsive underwater noise. Based on the available evidence, the most likely effect on cetaceans and other EPS would be temporary behavioural disturbance or short-term displacement from the immediate vicinity of the works (Todd *et al.*, 2015). Auditory injury is considered unlikely, as dredging operations typically generate substantially lower sound exposure

levels than impulsive activities such as impact piling or blasting and expected noise levels are unlikely to exceed recognised marine mammal injury thresholds (NMFS, 2024). Any disturbance effects are expected to be localised and temporary due to the limited spatial extent of the works and the availability of alternative habitat within the surrounding area. Should rock be encountered requiring use of an excavator-mounted hydraulic breaker, underwater noise levels and seabed vibration may increase; however, effects would still be expected to be restricted primarily to temporary behavioural responses and localised avoidance of the work area rather than auditory injury (Todd *et al.*, 2015).

A precautionary disturbance range of 2km was applied to cetacean EPS for all construction activities. This range does not represent an auditory injury threshold, but rather a conservative estimate of the area within which behavioural disturbance, such as temporary avoidance or displacement, could potentially occur as a result of continuous underwater noise and increased vessel activity. In the absence of established dose-response relationships or project-specific evidence for cetacean responses to dredging noise, the 2km range was adopted as a precautionary assessment distance. Any behavioural effects occurring within this range would be expected to be temporary and reversible following cessation of dredging activities. In order to determine the area of effect, a range of 2km was used to determine the potential disturbance area (of 12.57km²). This was then halved to take account of the coastal location of the proposed development area. Therefore, the total potential disturbance area is 6.29km².

The number of cetaceans that could be exposed to temporary disturbance is presented in **Table 3-3**. For all species assessed, less than 1% of the relevant populations may be disturbed from activities at the proposed development area.

Table 3-3 Number of EPS that could be disturbed from all construction activity

Species	Impact Range (km)	Area (km ²)	Maximum Number of Individuals (% of UK population)*
Harbour porpoise	2	6.29	2 (0.008% WS MU)
Bottlenose dolphin	2	6.29	<1 [0.3] (0.74% CWSH MU)
Common dolphin	2	6.29	<1 [0.3] (0.001% CGNS MU)
Risso's dolphin	2	6.29	<1 [0.02] (0.0002% CGNS MU)
White-beaked dolphin	2	6.29	2 (0.006% CGNS MU)
Orca	2	6.29	<1 [0.003] (0.04% WCC)
Minke whale	2	6.29	<1 [0.09] (0.001% CGNS MU)

*The number of individuals over 0.5 have been rounded up to the nearest number.

4 Cumulative Impact Assessment (CIA)

For wide ranging species such as cetaceans, it is important to consider other projects and activities over a wider area. Taking into account the potential impacts associated with the proposed CMAL SVRP works (**Section 3**), this has been based on the Scottish west coast area within 100 km of the proposed development.

Based on information provided by the Marine Directorate Licence Application website, there is one other activity that may take place at the same time as the proposed development activities; a benthic survey using geophysical survey equipment planned at MachairWind Export Cable Corridor. There is no further information publicly available, and therefore the JNCC EDR of 3km (with a disturbance area of 28.28 km²) (JNCC, 2025) for geophysical surveys has been used on which to base the cumulative assessment, with the same densities as for the proposed development.

Table 4-1 below provides the cumulative assessment for the proposed development with the MachairWind geophysical survey. In all cases, less than 5% of the relevant populations are at risk of temporary disturbance, with the exception of bottlenose dolphin with a population level of effect of 6.7%. For bottlenose dolphin (of the CWSH population), this is considered overly precautionary, primarily because of the very small population sizes involved; approximately 45 individuals for the CWSH bottlenose dolphin population. As a result, percentage-based calculations appear disproportionately large when applied to such limited reference populations. In addition, based on considering the location of the proposed works, it is unlikely that there would be any disturbance to bottlenose dolphin.

Project related

Table 4-1 Potential for cumulative Impacts (with % of reference population in brackets)

Cumulative Impacts	Potential area of Impact	Harbour Porpoise	Bottlenose Dolphin	Common Dolphin	Risso's Dolphin	White-beaked Dolphin	Orca	Minke Whale
Proposed developments at CMAL SVRP	6.29km ²	2 (0.008% WS MU)	0.3 (0.74% CWSH MU)	0.3 (0.001% CGNS MU)	0.02 (0.0002% CGNS MU)	2 (0.006% CGNS MU)	0.003 (0.04% WCC)	0.09 (0.001% CGNS MU)
MachairWind benthic surveys using USBL (3km EDR)	28.28km ²	6 [5.7]	2 [1.5]	2 [1.5]	0.07	8 [7.2]	0.01	0.4
Total	-	8 (0.03% WS MU)	<3 [1.8] (6.7% CWSH MU)	<3 [2.3] (0.004% CGNS MU)	<1 [0.09] (0.001% CGNS MU)	10 (0.03% CGNS MU)	<1 [0.013] (0.21% WCC)	<1 [0.49] (0.005% CGNS MU)

5 Mitigation Strategy

The equipment likely to be used during the proposed development is described in **Table 1-1**. The underwater noise generated by these activities falls within the hearing range of cetacean species (**Table 3-1**); however, source levels are anticipated to remain well below recognised auditory injury thresholds (NMFS, 2018; NMFS, 2024); (see **Table 3-2**). Consequently, the risk of injury, or permeant/temporary auditory is considered negligible and specific mitigation measures to prevent injury are not considered necessary.

The underwater noise and vibration generated by the works have the potential to result in temporary behavioural disturbance to cetaceans in the vicinity of the works. Any such effects are expected to be localised to the port area and temporary in nature. As a precautionary measure, a pre-works visual scan will be undertaken prior to the commencement of noisy or vibration-generating activities to confirm that no EPS are present within the immediate vicinity of the works. Following the commencement of activities, underwater noise levels will remain consistent and predictable, allowing animals to avoid the area if required. Any cetaceans approaching the works area after activities have commenced would do so voluntarily and would be expected to retain the ability to move away from the source at any time. Therefore, significant disturbance or auditory injury to EPS is not anticipated.

6 Assessment of Potential Offence

Following the Marine Scotland (2020) guidance, relevant to the proposed works at CMAL SVRP which occur in waters within the 12nm limit, it is concluded that potential impacts from the proposed works are unlikely to result in the harassment, disturbance, injury or killing of an EPS as defined under regulation 39(1) of the Conservation (Natural Habitats &c.) Regulations 1994 (as amended in Scotland) (referred to as the Habitats Regulations).

In relation to regulation 39(2) of the Habitats Regulations, the percentage of the reference population of each the proposed works is considered to be negligible (less than 1%), with exception to bottlenose dolphin and orca. However, professional judgement is applied to provide a more ecologically realistic interpretation, recognising that the calculations are affected by an inflated scale effect which is really based on the low reference population, and therefore not detrimental to the maintenance of the population of the species concerned at FCS. Any disturbance is likely to be localised and short-term, and with mitigation is considered to be negligible. Disturbance will not be sufficient to cause any population level effects, and thus it is considered that an EPS licence (to disturb) can be issued under Section 39 of The Conservation (Natural Habitats, &c) Regulations 1994 (as amended in Scotland).

With regard to basking sharks, there is no potential for population level impacts to basking shark as a result of injury due to the underwater noise and vibration, due to noise level being low in volume, and with mitigation applied. Therefore, if works are required during the summer season, it is considered that a basking shark licence can be issued under the Wildlife and Countryside Act 1981.

6.1 EPS Licencing Tests

The purpose of the EPS Risk Assessment presented in this report is to determine whether, when considering appropriate mitigation as presented in **Section 5**, there is still potential for the marine survey activities to cause deliberate harm, or inadvertently cause disturbance to cetaceans or other protected species. The need for a Marine EPS Licence will be determined by MS-LOT, with advice from NatureScot, based on findings from this EPS Risk Assessment.

MS-LOT's consideration of whether an EPS Licence will be required will comprise three tests, as outlined in **Section 1**.

Test 1: The licence must relate to one of the purposes referred to in Regulation 44.

The Scottish Government can only issue licenses under Regulation 44(2) of the Regulations (as amended) for specific purposes. These purposes include:

- 44(2)(e) preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment.

The proposed port development satisfies the purpose test under Regulation 44, as the works are required to support and maintain essential port infrastructure that serves an important public interest. The development will facilitate the safe operation of the harbour, improve access for commercial and recreational vessels, and support regional economic activity. In addition, the port provides infrastructure that may support wider strategic objectives, including marine transport, fisheries, and the construction, operation and maintenance of offshore renewable energy developments. As such, the proposed works are considered necessary for imperative reasons of overriding public interest, including those of a social and economic nature, and therefore meet the purpose test for the licensing of activities that may affect European Protected Species.

Test 2: There must be no satisfactory alternative (Regulation 44, 3a).

There is no satisfactory alternative to the proposed development that would achieve the project objectives whilst avoiding the need for the works. The location of the development is constrained by the existing port infrastructure and operational requirements, meaning that the works must be undertaken within the existing harbour footprint to deliver the required improvements. Alternative locations have been discounted as they would not provide the necessary connectivity to existing infrastructure or would fail to meet the operational needs of the harbour. In addition, alternative construction methods and design options have been considered, and where practicable, measures have been incorporated to minimise underwater noise, disturbance and other environmental effects. Consequently, there is no satisfactory alternative that would deliver the required project outcomes whilst resulting in a lower impact on EPS.

Test 3: The action authorised must not be detrimental to the maintenance of the population of the species concerned at FCS in their natural range (Regulation 44, 3b).

The percentage of the reference population of each species, which has the potential to be temporary disturbed, over a relatively small area for a short period of time, based on the predicted noise from the site investigation survey, is considered to be insignificant for all the cetacean species which occur in the proposed port development areas, and therefore not detrimental to the maintenance of the population of the species concerned at a FCS level.

7 Conclusion

Based on the nature of the proposed works, the equipment to be used, and the anticipated underwater noise levels, there is no pathway by which EPS would be exposed to sound levels exceeding recognised auditory injury thresholds. The risk of auditory injury, including PTS/TTS or other forms of physical injury, is therefore considered negligible. Consequently, the proposed works are not expected to result in injury to EPS, and an **EPS licence for injury is not considered necessary**.

However, underwater noise and vibration generated during the works may result in short-term behavioural disturbance to EPS within the vicinity of the development. Any disturbance is expected to be localised, temporary and reversible, with animals able to avoid the affected area and utilise suitable alternative habitat in the surrounding environment. While significant disturbance is not anticipated, there remains the potential for activities to cause disturbance to EPS as defined under the Conservation (Natural Habitats, &c.) Regulations. As such, the requirement for an **EPS licence should be considered in relation to disturbance** effects rather than injury. If deemed necessary by the licensing authority, any EPS licence requirement would therefore relate solely to the potential for temporary disturbance and not to the risk of injury.

References

ASCOBANS (2015). Recommendations of ASCOBANS on the Requirements of Legislation to Address Monitoring and Mitigation of Small Cetacean Bycatch. October 2015.

Beck, S., Kiszka, J.J., Kinze, C.C., Rasmussen, M.H., Simon, M., Mikkelsen, L. and Robinson, K.P. (2014). *Using opportunistic photo-identifications to detect a population decline of killer whales (Orcinus orca) in British and Irish waters*. Journal of the Marine Biological Association of the United Kingdom, 94(6), pp.1327–1333.

CSA Ocean Sciences (2014). *Development and Assessment of Underwater Sound Metrics*. U.S. Bureau of Ocean Energy Management.

Defra (2003). UK small cetacean bycatch response strategy. Department for Environment, Food and Rural Affairs. March 2003.

Erbe, C., Marley, S.A., Schoeman, R.P., Smith, J.N., Trigg, L.E. & Embling, C.B. (2019). The effects of ship noise on marine mammals. *Frontiers in Marine Science*, 6, 606.

Illingworth & Rodkin (2007). *Compendium of Pile Driving Sound Data*. California Department of Transportation.

Gilles, A., Authier, M., Ramirez-Martinez, N.C., Araújo, H., Blanchard, A., Carlström, J., Eira, C., Dorémus, G., Geelhoed, S.C.V., Kyhn, L., Laran, S., Nachtsheim, D., Panigada, S., Pigeault, R., Sequeira, M., Sveegaard, S., Taylor, N.L., Owen, K., Saavedra, C., Vázquez-Bonales, J.A., Unger, B. and Hammond, P.S. (2023). *Estimates of Cetacean Abundance in European Atlantic Waters in Summer 2022 from the SCANS-IV Aerial and Shipboard Surveys*. Wageningen: SCANS-IV Consortium.

Hebridean Whale and Dolphin Trust (HWDT). (2023). *West Coast Community Photo-Identification Catalogue*. Tobermory: Hebridean Whale and Dolphin Trust.

IAMMWG (Inter-Agency Marine Mammal Working Group). (2023). *Review of Management Unit Boundaries for Cetaceans in UK Waters (2023)*. JNCC Report No. 734. Peterborough: Joint Nature Conservation Committee. Available at: <https://jncc.gov.uk/resources/b48b8332-349f-4358-b080-b4506384f4f7> (Accessed: 28 July 2026)

JNCC, Natural England and CCW (2010). Draft EPS Guidance - The protection of marine European Protected Species from injury and disturbance. Guidance for the marine area in

England and Wales and the UK offshore marine area. Joint Nature Conservation Committee, Natural England and Countryside Council for Wales. October 2010.

JNCC (2024). *Marine Mammals and Noise Mitigation*. Joint Nature Conservation Committee. Available at: <https://jncc.gov.uk/our-work/marine-mammals-and-noise-mitigation/> [jncc.gov.uk]

JNCC. 2025. Updated Effective Deterrent Ranges (EDRs) for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise Special Areas of Conservation (SACs). (England, Wales & Northern Ireland) JNCC Report 803. JNCC, Peterborough, ISSN 0963-8091.

<https://hub.jncc.gov.uk/assets/5376c9a1-5d88-4291-aab4-028d5b4a1acd>

Louis, M., Viricel, A., Lucas, T., Peltier, H., Alfonsi, E., Berrow, S., Brownlow, A., Covelo, P., Dabin, W., Deaville, R., de Stephanis, R., Gally, F., Gauffier, P., Penrose, R., Silva, M.A., Guinet, C. and Simon-Bouhet, B. (2014). Habitat-driven population structure of bottlenose dolphins (*Tursiops truncatus*) in the North-East Atlantic. *Molecular Ecology*, **23**(4), pp.857–874. <https://doi.org/10.1111/mec.12653>.

Macleod, K., Lacey, C., Quick, N., Hastie, G. and Wilson J. (2011). Guidance on survey and monitoring in relation to marine renewables deployments in Scotland. Volume 2. Cetaceans and Basking Sharks. Unpublished draft report to Scottish Natural Heritage and Marine Scotland.

Marine Scotland. (2014). *The Protection of Marine European Protected Species from Injury and Disturbance: Guidance for Scottish Inshore Waters*. Edinburgh: Scottish Government.

Marine Scotland. (2020). *Marine European Protected Species: Protection from Injury and Disturbance – Guidance for Scottish Inshore Waters*. Edinburgh: Scottish Government. Available at: <https://www.gov.scot/publications/marine-european-protected-species-protection-from-injury-and-disturbance/>

McKenna, M.F., Ross, D., Wiggins, S.M. & Hildebrand, J.A. (2012). Underwater radiated noise from modern commercial ships. *Journal of the Acoustical Society of America*, 131(1), 92-103.

Macleod, K., Lacey, C., Quick, N., Hastie, G. and Wilson, J. (2011). *Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland. Volume 2: Cetaceans and Basking Sharks*. Unpublished draft report to Scottish Natural Heritage and Marine Scotland. [tethys.pnnl.gov]

Mickle, M.F., Pieniazek, R.H. and Higgs, D.M. (2020). Field assessment of behavioural responses of southern stingrays (*Hypanus americanus*) to acoustic stimuli. *Royal Society Open Science*, 7(1), 191544. <https://doi.org/10.1098/rsos.191544>

North Atlantic Marine Mammal Commission (NAMMCO). (2023). *Killer Whale (Orcinus orca)*. Tromsø: NAMMCO. Available at: <https://nammco.no/killer-whale/>

NatureScot. (2020). Conservation and Management Advice. Inner Hebrides and The Minches SAC. July 2020. <https://apps.snh.gov.uk/sitelink-api/v1/sites/10508/documents/59>

Nedwell, J.R., Turnpenny, A.W.H., Lovell, J.M. & Parvin, S.J. (2003). *The Underwater Noise of Hydraulic Rock Breakers*. Subacoustech Report.

NMFS (2018). *2018 Revision to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing*. U.S. National Marine Fisheries Service.

National Marine Fisheries Service. 2024. Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0): Underwater and In Air Criteria for Onset of Auditory Injury and Temporary Threshold Shifts. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OPR-71, 182 p.

Richardson, W.J., Greene, C.R., Malme, C.I. & Thomson, D.H. (1995). *Marine Mammals and Noise*. Academic Press.

Popper, A.N., Hawkins, A.D., Fay, R.R., Mann, D.A., Bartol, S., Carlson, T.J., Coombs, S., Ellison, W.T., Gentry, R., Halvorsen, M.B., Løkkeborg, S., Rogers, P.H., Southall, B.L., Zeddis, D.G. and Tavolga, W.N. (2014). *Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report*. SpringerBriefs in Oceanography. Cham: Springer

Robinson, S.P., Lepper, P.A. & Hazelwood, R.A. (2011). *Good Practice Guide for Underwater Noise Measurement*. National Physical Laboratory.

Rodkin, R.B. & Pommerenck, K. (2014). *Construction Underwater Noise and Vibration Impact Analysis*. California Department of Transportation.

SCOS (2025). SCOS Report. Scientific Advice on Matters Related to the Management of Seal Populations: 2025. Available at: <https://www.smru.standrews.ac.uk/files/2026/02/SCOS-2025.pdf>

Shark Trust. (2018). *Basking Shark Project*. Plymouth: The Shark Trust. Available from the Shark Trust Basking Shark Project resources.

Shark Trust. (2020). *Basking Shark Project Report 2020*. Plymouth: The Shark Trust.

Southall, B.L., Finneran, J.J., Reichmuth, C., et al. (2019). *Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects*. *Aquatic Mammals*, 45(2), 125-232

Todd, V.L.G., Friel, B., Hobbs, R. & Morrison, J.R. (2015). Underwater noise of dredging, drilling and marine construction activities and the potential impacts on marine mammals. In: *Oceanography and Marine Biology: An Annual Review*, 53, 99-164.

Urick, R.J. (1983). *Principles of Underwater Sound* (3rd Edition). McGraw-Hill.

Waggitt, J.J., Evans, P.G., Andrade, J., Banks, A.N., Boisseau, O., Bolton, M., Bradbury, G., Brereton, T., Camphuysen, C.J., Durinck, J. and Felce, T. (2019). Distribution maps of cetacean and seabird populations in the North-East Atlantic. *Journal of Applied Ecology*, 57(2), pp.253-269.